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INTERNATIONAL CONFERENCE ON ULTRASTRUCTURE IN ORGANIC  
AND INORGANIC POLYM (U) MASSACHUSETTS UNIV AMHERST  
DEPT OF POLYMER SCIENCE AND ENGINE F E KARASZ

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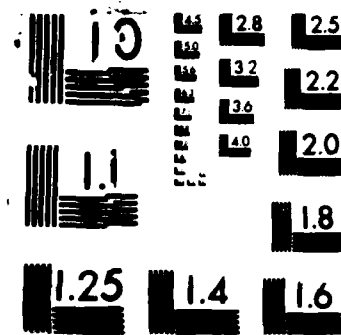
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Form Approved  
OMB No. 0704-0188

1a. REPORT SE UNCLASSIFIED			1b. RESTRICTIVE MARKINGS		
2a. SECURITY CLASSIFICATION AUTHORITY DTIC ELECTED			3. DISTRIBUTION / AVAILABILITY OF REPORT Approved for public release; distribution unlimited.		
2b. DECLASSIFICATION / DOWNGRADING SCHEDULE JUN 24 1987			5. MONITORING ORGANIZATION REPORT NUMBER(S) AFOSR-TR-87-0668		
4. PERFORMING ORGANIZATION REPORT NUMBER(S)			7a. NAME OF MONITORING ORGANIZATION AFOSR/NC		
6a. NAME OF PERFORMING ORGANIZATION University of Massachusetts		6b. OFFICE SYMBOL (if applicable)	7b. ADDRESS (City, State, and ZIP Code) Building 410 Bolling AFB, DC 20332-6448		
6c. ADDRESS (City, State, and ZIP Code) Polymer Science and Engineering Amherst, MA 01003		9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER AFOSR-85-0314			
8a. NAME OF FUNDING / SPONSORING ORGANIZATION AFOSR		8b. OFFICE SYMBOL (if applicable) NC	10. SOURCE OF FUNDING NUMBERS		
8c. ADDRESS (City, State, and ZIP Code) Building 410 Bolling AFB, DC 20332-6448		PROGRAM ELEMENT NO. 61102F	PROJECT NO. 2303	TASK NO. A3	WORK UNIT ACCESSION NO.
11. TITLE (Include Security Classification) International Conference on Ultrastructure in Organic and Inorganic Polymers (U)					
12. PERSONAL AUTHOR(S) Frank E. Karasz					
13a. TYPE OF REPORT FINAL		13b. TIME COVERED FROM 15Sep85 to 14Feb86		14. DATE OF REPORT (Year, Month, Day)	
				15. PAGE COUNT 10	
16. SUPPLEMENTARY NOTATION					
17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)		
FIELD	GROUP	SUB-GROUP	Ultrastructure, Inorganic Polymers, Organic Polymers, polymers		
19. ABSTRACT (Continue on reverse if necessary and identify by block number)					
<p>An International Conference on Ultrastructure in Organic and Inorganic Polymers was held at the University of Massachusetts October 20-24, 1985. The Co-Chairmen were Dr. Donald R. Ulrich, AFOSR and Dr. Frank E. Karasz, University of Massachusetts. The main focus was on the microstructure of polymeric structures that can be achieved by processing, and its conference included substantial components dealing with the ultrastructures arising from novel manufacturing techniques. The conference performed the useful objective of integrating discrete groups in the materials field and in this respect was the logical successor to two Conferences, with a mainly inorganic ceramic theme, organized in 1983 and 1985 by the University of Florida.</p> <p>(Keyman)</p>					
20. DISTRIBUTION / AVAILABILITY OF ABSTRACT <input checked="" type="checkbox"/> UNCLASSIFIED/UNLIMITED <input checked="" type="checkbox"/> SAME AS RPT. <input type="checkbox"/> DTIC USERS			21. ABSTRACT SECURITY CLASSIFICATION UNCLASSIFIED		
22a. NAME OF RESPONSIBLE INDIVIDUAL Dr. Donald R. Ulrich			22b. TELEPHONE (Include Area Code) (202) 767-4960		22c. OFFICE SYMBOL NC

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OCT 15

FINAL REPORT

INTERNATIONAL CONFERENCE ON ULTRASTRUCTURE IN ORGANIC  
AND INORGANIC POLYMERS

**AFOSR-TB- 87 - 0 6 6 8**

AIR FORCE OFFICE OF SCIENTIFIC RESEARCH (AFOSR)  
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WILLIAM A. KERRER

Chief, Research Information Division

AIR FORCE OFFICE OF SCIENTIFIC RESEARCH

Grant AFOSR 85-0314

15 September 1985 - 14 February 1986

Frank E. Karasz

Polymer Science and Engineering

University of Massachusetts

Amherst, MA 01003

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#### ACKNOWLEDGEMENT

The Principal Investigator would like to express his sincere thanks to Dr. Donald L. Ball, Director of Chemical Sciences, Air Force Office of Scientific Research, to Dr. Donald R. Ulrich, Program Manager, Directorate of Chemical Sciences, and to other members of the Directorate, for their unfailing cooperation, help and courtesy extended to him during the period of this grant.

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I. TITLE: International Conference on Ultrastructure in Organic and Inorganic  
Polymers

II. PRINCIPAL INVESTIGATOR: Dr. Frank E. Karasz  
Polymer Science and Engineering Dept.  
University of Massachusetts  
Amherst, MA 01003

III. CONTRACT NUMBER: AFOSR 85-0314

IV. DATES: 15 September 1985 - 14 February 1986

V. SENIOR RESEARCH PERSONNEL: None

VI. JUNIOR RESEARCH PERSONNEL: None



## VII. ABSTRACT OF ACCOMPLISHMENTS

An International Conference on Ultrastructure in Organic and Inorganic Polymers was held at the University of Massachusetts October 20-24, 1985. The Co-Chairmen were Dr. Donald L. Ulrich, AFOSR and Dr. Frank E. Karasz, UMass. The main focus was on the microstructure of polymeric structures that can be achieved by processing, and its conference included substantial components dealing with the ultrastructures arising from novel manufacturing techniques. The conference performed the useful objective of integrating discrete groups in the materials field and in this respect was the logical successor to two Conferences, with a mainly inorganic ceramic theme, organized in 1983 and 1985 by the University of Florida.

## VIII. DESCRIPTION OF ACCOMPLISHMENTS

An International Conference on Ultrastructure in Organic and Inorganic Polymers was held at the University of Massachusetts October 20-24, 1985. The Co-Chairmen were Dr. Donald L. Ulrich, AFOSR and Dr. Frank E. Karasz, UMass.

The conference brought together leading experts in the field of the structure and morphology of organic polymers with a representative group of structural processing leaders in the ceramic field who explored common themes and problems and strengthened communications between the two materials groups.

The program consisted of six half day sessions with an average of four invited papers per session. Ample time was allocated for discussion, poster sessions and for summations.

Each session was devoted to one or more of the following themes:

- a. Structure in Block Copolymers
- b. Polymer Morphology Developed by Processing
- c. Polymers from Precursors
- d. Ionic Domains in Polymers
- e. Ultrastructure in Ceramics (mostly review papers)
- f. Composite Structures

Twenty-three invited papers were presented. The poster session contained thirteen contributions.

The Conference took place in the fully equipped Conference Center and Hotel which was available on campus (rooms and facilities had already been reserved for this period) and the Conference Service infrastructure was available to assist in the organizational details. Approximately 180 scientists (not including UMass students and faculty) attended the Conference.

The budget reflected the international nature of the meeting. The Conference covered the costs of invited academic and government speakers for travel and living (no honoraria were offered). Industrial scientists (invited and contributing) were self-supported.

The Program for the invited papers is appended.

#### IX. PUBLICATIONS

None

# Final Program

*All Technical Sessions will be in the Campus Center Auditorium. The Poster Session will be in Room 163, Campus Center.*

## Sunday, October 20

3:00-7:00 p.m. Registration, Hotel Lobby, 3rd Level, Campus Center

7:00 p.m. Informal mixer, Room 1009 (10th floor), Campus Center

## Monday, October 21

**AM** Chairman: Donald Ulrich, AFOSR

7:30-8:45 Registration, Arcon Desk, 1st Floor Campus Center

9:00 Welcoming Remarks: Chancellor Joseph Duffey

9:20-10:10 H. Allcock, Pennsylvania State University  
**POLYPHOSPHAZENES AS PRECURSORS TO CERAMICS**

10:10-11:00 Robert C. West, University of Wisconsin  
**POLYSILANES: A NEW CLASS OF HIGH POLYMERS AND THEIR TECHNOLOGICAL APPLICATIONS**

11:00-11:20 Coffee Break

11:20-12:10 Dietmar Seyferth, MIT  
**THE INORGANIC AND ORGANOMETALLIC POLYMER ROUTE TO CERAMIC MATERIALS**

**PM** Chairman: Ivan Goldfarb, AFML

1:45-2:35 John D. Mackenzie, University of California, Los Angeles  
**POLYMER-IMPREGNATED POROUS GLASS COMPOSITES**

2:35-3:25 Rustum Roy, Pennsylvania State University  
**USE OF NATURAL MODELS AND TEMPLATES IN SYNTHESIS OF CERAMIC MICRO AND NANO COMPOSITES**

3:25-4:15 H. Kent Bowen, MIT  
**CHEMICAL APPROACHES TO CERAMIC PARTICULATES**

4:30-6:00 Poster Session, Room 163  
Soft drinks and Cheese

## Tuesday, October 22

**AM** Chairman: E. L. Thomas, UMASS

8:30-9:20 Larry L. Hench, University of Florida  
**ULTRASTRUCTURE OF SOL-GEL GLASSES**

9:20-10:10 Donald R. Uhlmann, MIT  
**THE FORMATION OF CERAMICS BY POLYMERIZATION PROCESSING**

10:10-10:30 Coffee Break

Chairman: Donald Ball, AFOSR

10:30-11:20 A.F. Garito, University of Pennsylvania  
**MOLECULAR NONLINEAR OPTICS: NONLINEAR OPTICAL PROPERTIES IN ORGANIC AND POLYMER SYSTEMS**

11:20-12:10 Anselm C. Griffin, University of Southern Mississippi  
**NITROAROMATIC LIQUID CRYSTALLINE POLYMERS: UNIQUE STRUCTURES FOR NON-LINEAR OPTICAL MATERIALS**

**PM** Free

## Wednesday, October 23

**AM** Chairman: Phillip Parrish, DARPA

8:30-9:20 Larry R. Dalton, University of Southern California  
**ULTRASTRUCTURE IN CONDUCTING POLYMERS: THE ROLE OF DELOCALIZED  $\pi$ -ELECTRONS**

9:20-10:10 Gary E. Wnek, MIT  
**ELECTRICALLY CONDUCTING COPOLYMERS AND BLENDS**

10:10-10:30 Coffee Break

Chairman: A. Matuszko, AFOSR

10:30-11:20 Michael Jaffe, Celanese  
**PROCESS-STRUCTURE-PROPERTY RELATIONSHIPS OF HIGHLY ORIENTED POLYMERS**

11:20-12:10 H.H. Winter, University of Massachusetts  
**FLOW INDUCED STRUCTURE AND RHEOLOGY OF BLOCK COPOLYMERS**

**PM** Chairman: Frank N. Kelley, University of Akron

1:45-2:35 Hugh Brown, IBM, San Jose  
**SMALL-ANGLE X-RAY SCATTERING STUDIES ON THE EFFECT OF DEFORMATION ON CRAZE MORPHOLOGY**

2:35-3:25 James E. McGrath, Virginia Polytechnic Institute and State University  
**ORGANOSILOXANE BLOCK AND SEGMENTED POLYMERS: SYNTHESIS, BULK, SURFACE AND DEGRADATION BEHAVIOR**

3:25-4:15 Paras N. Prasad, SUNY, Buffalo  
**MOLECULAR MECHANICS OF POLYMERIC THIN FILMS**

4:15-5:00 G. Hadziioannou, IBM  
**PROPERTIES OF BLOCK COPOLYMERS A) IN THE MESOMORPHIC STATE B) ADSORBED ON A SURFACE**

6:30 Social Hour

7:30 Banquet

Social hour and banquet at the Northampton Hilton Inn (I-91/US 5). Transportation provided at 6:00 pm.

### Thursday, October 24

AM Chairman: Frank E. Karasz, University of Massachusetts

8:30-9:20 Ezio Martuscelli, CNR, Arco Felice, Naples  
**COPOLYMER FORMATION DURING PROCESSING OF RUBBER-CONTAINING BLENDS: INFLUENCE OF COPOLYMER STRUCTURE ON MORPHOLOGY AND BLEND PROPERTIES**

9:20-10:10 Ronald K. Eby, The Johns Hopkins University  
**CRYSTAL DEFECTS AND THE HIGH PRESSURE PHASE OF PTFE**

10:10-10:30 Coffee Break

10:30-11:20 Wade Adams and T. Helminiak, AFML  
**ULTRASTRUCTURE OF ORDERED POLYMERS**

11:20-12:10 Dale L. Handlin, Shell  
**COMPOSITION-MORPHOLOGY-PROPERTY RELATIONSHIPS OF TRIBLOCK AND STAR DIBLOCK COPOLYMERS**

12:10-1:00 J.E. Mark, University of Cincinnati  
**BIMODAL NETWORKS AND NETWORKS REINFORCED BY THE IN-SITU PRECIPITATION OF FILLERS**

Conference Adjourned  
Lunch Available

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